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Electronic Supplementary Information

Hydrothermal preparation of WO_3 nanorod arrays and ZnO nanosheet arrays composite structures on FTO substrates with enhanced photocatalytic properties

Feng Zheng[a,b,c], Hui Lu[a], Min Guo[,a], Mei Zhang[a], Qiang Zhen[b,c]*

Fig. S1 shows the XRD pattern of the WO_3 seed layers pre-coated on FTO substrate. The orientation of the seeds can be divided into two kinds: parallel to substrate such as [200], [420] directions and non-parallel to substrate such as [202], [222] directions.

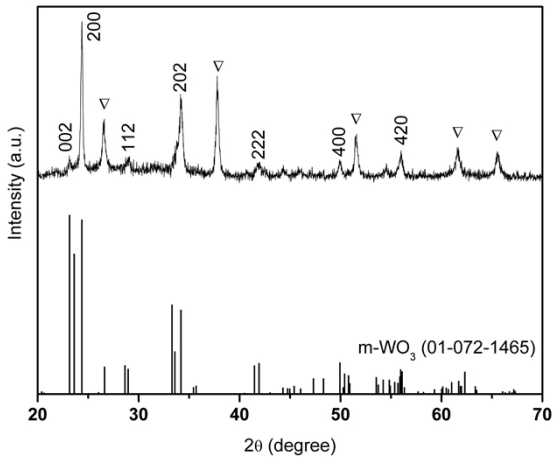

Fig. S1 XRD pattern of the WO_3 seed layers pre-coated on FTO substrate.

[a] *State Key Laboratory of Advanced Metallurgy, School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing, Beijing 100083, P. R. China*

[b] *Materials Science and Engineering college, Shanghai University, Shanghai 200444,P. R. China*

[c] *Nano-science and Nano-technology Research Center, School of Materials Science and Engineering, Shanghai University, Shanghai 200444, P.R. China*

[*] *E-mail: guomin@ustb.edu.cn, Fax: +86 10 62334926*

Fig. S2 shows the morphology of unchin-like WO_3 nanorod arrays and the corresponding heterostructures by adjusting the hydrothermal reaction times of preparation of WO_3 nanorod arrays (4 h) and ZnO nanosheet arrays (1.5 h).

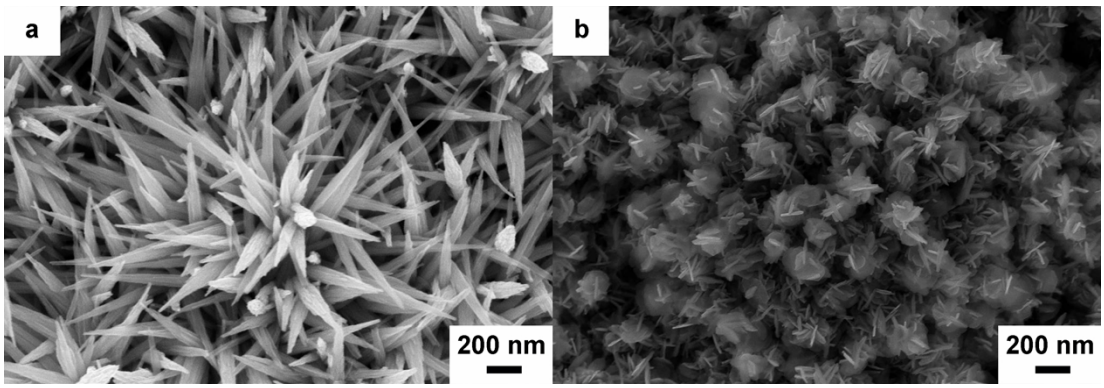

Fig. S2 SEM images of (a) unchin-like nanorod arrays and (b) corresponding composite structures.

Fig. S3 shows the morphologies of the primary structure of ZnO nanorod arrays grown on FTO substrate and hierarchical structure of ZnO nanorods grown on the primary structure under the hydrothermal conditions mentioned in the experimental (section 2.3).

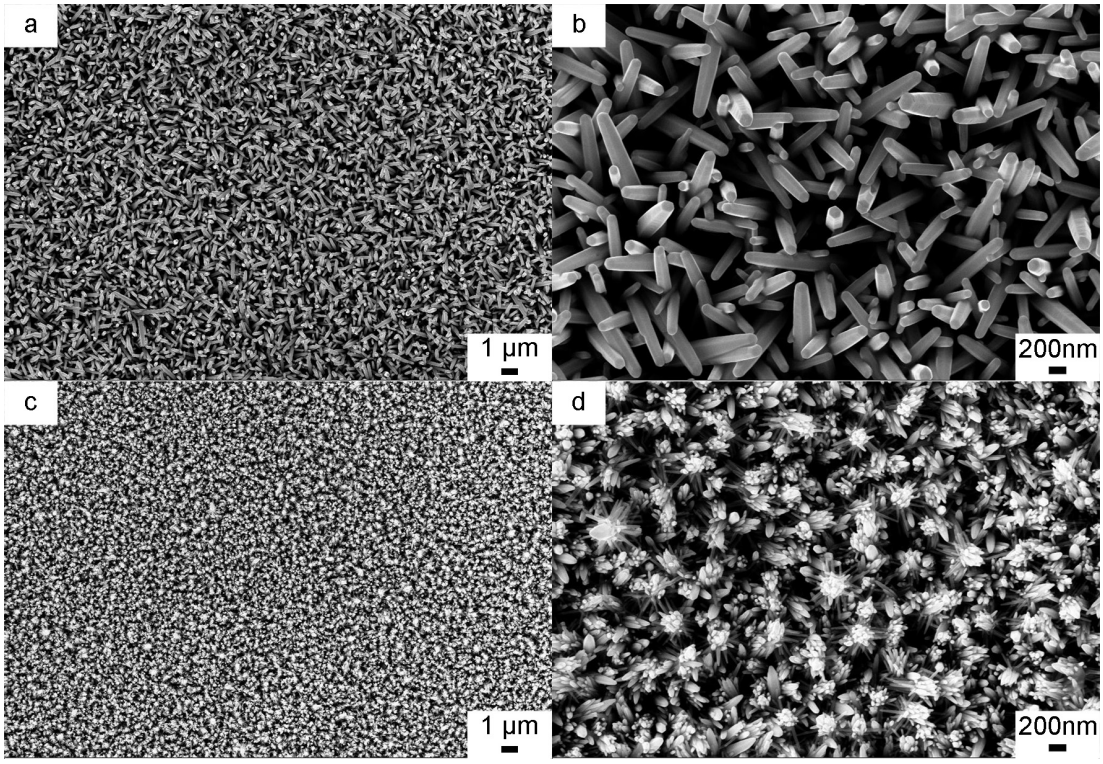

Fig. S3 SEM images of the primary structure of ZnO nanorod arrays grown on FTO substrate (a) with low magnification and (b) with high magnification. SEM images of the ZnO nanorods- ZnO nanorods hierarchical structure (c) with low magnification and (d) with high magnification.

Fig. S4 shows the effect of the active species during photocatalytic degradation. 1.0 mM isopropanol and 1.0 mM benzoquinone are added to scavenge OH• and O_2^-, respectively. Then the degradation efficiencies in 60 min are decreased significantly, which means that the active OH• and O_2^- play important roles in photocatalytic degradation.

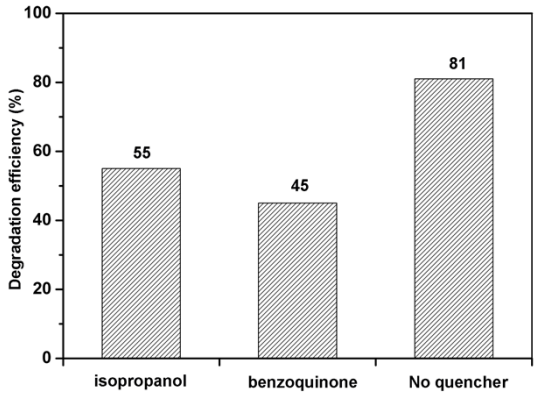

Fig. S4 The degradation efficiencies of methyl blue during photo-degradation under the addition of different scavengers.